

314001.3 EE

CLAIMS

1. Peptide characterized in that it consists of the peptide sequence (I) below:

5 J¹-J²-J³-J⁴-J⁵-J⁶-Z⁷-U⁸-J⁹-J¹⁰-U¹¹-Arg-J¹³-J¹⁴-U¹⁵-Lys-Gly-
X¹⁸-Gly-Thr-J²¹-Glu-J²³-J²⁴-U²⁵-J²⁶-J²⁷-J²⁸-U²⁹-J³⁰-J³¹-
Arg-J³³-J³⁴-J³⁵-J³⁶-B³⁷-J³⁸-J³⁹-U⁴⁰-J⁴¹-J⁴²-J⁴³-U⁴⁴-J⁴⁵-J⁴⁶-J⁴⁷-
J⁴⁸-J⁴⁹-Arg-J⁵¹-U⁵²-J⁵³-J⁵⁴-Asp-U⁵⁶-Lys-Ser-Z⁵⁹-Leu-J⁶¹-J⁶²-
10 J⁶³-J⁶⁴-Z⁶⁵-J⁶⁶-J⁶⁷-U⁶⁸-J⁶⁹-J⁷⁰-J⁷¹-U⁷²-J⁷³-J⁷⁴-J⁷⁵ (I)

in which J, Z, U, X and B represent amino acids such that:

- 15 - the amino acids J are chosen, independently of one another, from natural amino acids or derivatives thereof, such that at least 50% of them are polar residues chosen from Arg, Asn, Asp, Cys, Gln, Glu, Gly, His, Lys, Orn, Pro, Ser, Thr and Tyr,
- 20 - the amino acids U are chosen from Ala, Cys, Gly, Ile, Leu, Met, Phe, Trp, Tyr and Val,
 - the amino acid X¹⁸ is chosen, independently of the other amino acids of the sequence, from Ala, Asn, Cys, Gln, Gly, His, Ile, Leu, Met, Phe, Ser, Thr, Trp, Tyr and Val,
- 25 - the amino acid B³⁷ is chosen, independently of the other amino acids of the sequence, from Arg, Ala, Cys, Gly, Ile, Leu, Met, Phe, Trp, Tyr and Val,
 - the amino acid Z⁷ is chosen, independently of the other amino acids of the sequence, from Asp and Glu,
- 30 - the amino acids Z⁵⁹ and Z⁶⁵ are chosen, independently, from Glu, Asp, Lys or Arg,
- 35 the superscripts of J, Z, U, X and B representing the position of these amino acids in said sequence.

2. Peptide according to Claim 1, in which the amino acids J are chosen, independently of one another, from

B14001.3. EE

Ala, Arg, Asn, Asp, Cys, Gln, Glu, Gly, His, Ile, Leu, Lys, Met, Phe, Pro, Ser, Thr, Trp, Tyr and Val, such that at least 50% of them are polar residues chosen from Arg, Asn, Asp, Gln, Glu, Gly, His, Lys, Pro, Ser and Thr.

3. Peptide according to Claim 1, in which the amino acids U and B of the sequence (I) are chosen according to one of the examples a) to j) disclosed in table 1 below:

	U ⁸	U ¹¹	U ¹⁵	U ²⁵	U ²⁹	B ³⁷	U ⁴⁰	U ⁴⁴	U ⁵²	U ⁵⁶	U ⁶⁸	U ⁷²
Ex a)	Val	Leu	Met	Ile	Leu	Arg	Ile	Tyr	Leu	Leu	Val	Leu
Ex b)	Ala	Ile	Ile	Ile	Leu	Arg	Ile	Tyr	Leu	Leu	Ile	Leu
Ex c)	Ala	Ile	Ile	Ile	Leu	Arg	Ile	Tyr	Leu	Leu	Met	Val
Ex d)	Ala	Leu	Met	Leu	Leu	Arg	Ile	Tyr	Leu	Leu	Ile	Met
Ex e)	Ala	Leu	Met	Ile	Ile	Arg	Val	Tyr	Leu	Leu	Ile	Met
Ex f)	Ala	Leu	Met	Ile	Ile	Arg	Ile	Phe	Leu	Leu	Ile	Met
Ex g)	Ala	Leu	Met	Ile	Val	Arg	Ile	Phe	Leu	Leu	Ile	Phe
Ex h)	Val	Leu	Met	Ile	Leu	Arg	Ile	Phe	Leu	Leu	Ile	Met
Ex i)	Ala	Leu	Met	Ile	Leu	Arg	Ile	Phe	Leu	Leu	Ile	Met
Ex j)	Ala	Leu	Met	Ile	Leu	Arg	Ile	Tyr	Leu	Leu	Ala	Ala
Ex k)	Val	Leu	Met	Ile	Leu	Arg	Ile	Tyr	Leu	Leu	Val	Leu
Ex l)	Val	Leu	Met	Ile	Leu	Arg	Ile	Phe	Leu	Leu	Val	Leu

(Ex = example)

4. Peptide consisting of a sequence chosen from the sequences ID No. 1 to ID No. 10 of the sequence listing in the appendix.

5. Peptide consisting of the sequence ID No. 1 of the sequence listing in the appendix.

6. Peptide according to any one of Claims 1 to 5, also comprising, linked to the N-terminal end of the sequence (I), an amino acid sequence chosen from

B14001.3 EE

Gly-Ser-Cys-, Gly-Ser-Thr-, Gly-Ser-Pro-, Gly-Ser-Ser-,
Gly-Ser-Gly-, and Gly-Ser-Gln-.

7. Peptide according to any one of Claims 1 to 5,
5 also comprising, linked to the N-terminal end of the
sequence (I), an amino acid sequence Gly-Ser-Gly-Cys-,
Gly-Cys-Gly-Ser-, Gly-Ser-Gly-Ser-, Gly-Cys-Gly-Cys- or
Gly-Cys-Gly-Ser-.

10 8. Peptide consisting of the sequence ID No. 11 or ID
No. 12 of the sequence listing in the appendix.

9. Peptide consisting of the sequence ID No. 13 or ID
No. 14 of the sequence listing in the appendix.

15 10. Process for producing a peptide according to any
one of Claims 1 to 9, said process comprising solid-
phase chemical synthesis of said peptide.

20 11. Process for producing a peptide according to one
of Claims 1 to 9, in culture, said process comprising
the following steps:

- 25 a) preparing a cDNA comprising a basic sequence
encoding said peptide,
b) inserting said cDNA into a suitable expression
vector,
c) transforming a suitable host cell with said vector
into which the cDNA has been inserted, for
30 replication of the plasmid,
d) producing said peptide by translation of said cDNA
in said host cell, and
e) recovering the synthesized peptide.

35 12. Process according to Claim 11, in which the vector
is a plasmid.

13. Process according to Claim 11, in which the vector

B14001.3 EE

is the vector pGEX-2T.

14. Process according to Claim 11, 12 or 13, in which the host cell is *E. coli*.

5

15. Chemical assembly with affinity for a phospholipid, characterized in that it comprises at least two peptides as defined in Claims 1 to 9, which may be identical or different, said peptides being
10 linked to one another.

16. Chemical assembly according to Claim 15, in which at least one of the peptides is one of the peptides defined in Claim 4.

15

17. Use of a peptide according to any one of Claims 1 to 9, for covering a biomaterial.

18. Use of a peptide according to any one of Claims 1 to 9, in the production of a filter for trapping activated circulating blood cells.
20

19. Labelling compound comprising a peptide as defined in any one of Claims 1 to 9, coupled to a labelling molecule or to nanoparticles that are dense in electron microscopy.
25

20. Labelling compound characterized in that it comprises an assembly as defined in Claim 15 or 16, coupled to a labelling molecule or to nanoparticles that are dense in electron microscopy.
30

21. Compound according to Claim 19 or 20, in which the labelling molecule is a fluorescent molecule.

35

22. Compound according to Claim 19 or 20, in which the labelling molecule consists of one of the partners of the avidin-biotin system.

B14001.3 EE

23. Compound according to Claim 19 or 20, in which the labelling molecule is a radio element.
- 5 24. Compound according to Claim 19 or 20, in which the labelling molecule is a contrast agent in magnetic resonance imaging.
- 10 25. Compound according to Claim 19 or 20, in which the labelling molecule is technetium.
- 15 26. Compound according to Claim 19 or 20, in which the nanoparticles that are dense in electron microscopy are gold nanoparticles.
27. Diagnostic kit comprising a compound according to either one of Claims 19 and 20.
- 20 28. Diagnostic kit according to Claim 27, also comprising a suitable reagent for detecting said labelling molecule.
- 25 29. Kit for analysing and detecting negative charges at the surface of cells, characterized in that it comprises a peptide according to any one of Claims 1 to 9.
- 30 30. Kit for analysing and detecting negative charges at the surface of cells, characterized in that it comprises an assembly according to Claim 15 or 16.
- 35 31. Kit for analysing and detecting microvesicles in the blood, characterized in that it comprises a peptide according to any one of Claims 1 to 9.
32. Kit for analysing and detecting microvesicles in the blood, characterized in that it comprises an assembly according to Claim 15 or 16.

B14001.3 EE

33. Kit according to Claim 29 or 31, in which the peptide is coupled to a label.

5 34. Kit according to Claim 30 or 32, in which the assembly is coupled to a label.

10 35. Filter for dialysing activated circulating blood cells, said filter being characterized in that it comprises a peptide according to any one of claims 1 to 9.